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REMARKS.

BY

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presented by the author

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A CASE OF HEMORRHAGIC IRITIS, WITH REMARKS.

By DR. CHARLES ZIMMERMANN, MILWAUKEE, WIS.

BEFORE entering into a discussion on the subject I shall give the clinical history of the following case :

A. B., a dredging contractor, aged thirty-three, of healthy appearance, had no constitutional disease, especially no lues nor tuberculosis. His parents are living and healthy. *Nov. 3, 1888*, he came to my office with a recent *iritis* of his *right* eye. Iris discolored, reacting sluggishly to light. A few synechiæ were torn by atropine. He was in bed until *Nov. 8th*, when he got up and went into another room of a cooler temperature. But he could not stay up long, on account of ciliary pain setting in soon after this change. In the evening I found the pupil dull and grayish from a very *copious fibrinous effusion into the anterior chamber*. The pupil was round but less dilated. No red reflex upon inspection with the ophthalmoscope. The next morning the exudation had become denser, so that he could not count fingers near by. Inunctions of mercurial ointment were ordered, which favored the absorption strikingly. *Nov. 10th*, the effusion was thinner, so that he could count fingers at three feet ; *Nov. 11th*, a cloudy red reflex could be obtained for the first time on ophthalmoscopic examination ; *Nov. 15th*, the pupil was free from any deposit ; V = fingers in ten feet ; he could distinguish the hands of the watch ; details of fundus could be seen indistinctly. *Nov. 19th*, he left the bed, and *Dec. 1st*, the house. *Dec. 4th*, V = $\frac{1}{8}$. *The eye recovered perfectly.*

In *January, 1890*, he had a slight *relapse* of *iritis* in the *same eye*. The blue iris discolored to green and ciliary injection, no syn-

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echiæ. He was at once put to bed and treated with atropine and diaphoretics, so that he *recovered in a week*.

April 20, 1892, he came again with slight pericorneal injection of the *same (right) eye*. The pupil reacted promptly to light, and as the iris showed no inflammatory symptoms, I attributed the cause of redness to some dust in his conjunctival sac, which I removed, and gave him cocaine as an antiphlogistic. *April 21st*, status idem. In the evening he went to a wedding party and danced considerably until the early morning. The consequence was a pronounced *iritis of the right eye*. An adhesion at the upper periphery became apparent after dilatation of the pupil by atropine. In the afternoon it was torn, iris green; the whole front of the eye intensely red; no pain. *April 24th*, put to bed, as a *gray exudation in the pupillary area* had formed. *April 25th*, the effusion being larger and chemosis having set in, six leeches were applied to the temple at 6 P.M.

April 26th: more than the lower two-thirds of the anterior chamber were filled with dark coagulated blood.

Only the upper portion of iris was visible. It showed intense swelling, was very much congested, and looked dull from fibrinous effusion into its structure. I ordered inunctions of mercurial ointment and diaphoretics. *April 27th*, the amount of blood had somewhat diminished. Pupil still covered by fibrinous deposits, which had also become less, so that the upper periphery of the pupil gave a red reflex upon ophthalmoscopic examination. $V = 0$. *April 28th*, he took salicylate of soda 5,00, every hour 1,00, with remarkably good result. *April 29th*, the largest portion of the pupil was free, and on *May 3d*, after repeated doses of salicylate of soda, there was no longer any trace of blood or fibrine in the anterior chamber.

He recovered very nicely. June 1st, V in that eye was $\frac{1}{16}$. During this last attack and even after convalescence, until July, he felt some pain in the muscles of his left upper arm, which appeared to be rheumatic. The patient is very much exposed to the injurious action of dampness, wind, and cold, being engaged in dredging rivers and lakes and building foundations in swamps, which may account for the frequent relapses of iritis.

The most striking feature in this case is the association of iritis with hyphæma, i. e., its hemorrhagic character.—The occurrence of hemorrhages during the course of iritis is

regarded as extremely rare, "exceptional" according to Wecker,¹ and, as far as I was able to peruse the incident literature, only a few publications exist on it by Hutchinson,² Keyser,³ Reche.⁴ In order to find an explanation for this complication, it be may well to consider *what part the blood plays in iritis*.

1. One of the first and usual signs of iritis is *hyperæmia*. Not only are the extremely numerous blood-vessels of the iris, which form the most prominent streaks of its surface, extended and injected so that they appear as red loops and nodules, but even a number of smaller vessels, not visible before, become quite pronounced now by their engorged condition. Wecker (*l. c.*) believes in a new formation of blood-vessels on the surface of the iris, and thinks that the so-called ecchymoses of the iris, if carefully examined through a magnifying glass, may be found to be mostly convolutions of small blood-vessels.

2. If we go a step further, some of the *coloring matter* of the *blood* will *transude* through the walls of the blood-vessels of the iris, which are pretty thick on account of their well-developed muscular structure, imparting a different tint to the natural color of the iris by *infiltration of its stroma with hæmoglobine*.

3. A higher degree of inflammatory reaction will be indicated, if the *walls of the blood-vessels* undergo such a change, that they *become permeable* for the *red-blood corpuscles*, which pass them and enter the tissue of the iris. Then we have extravasations of blood into the substance of the iris. Larger hemorrhages especially happen between the posterior limiting membrane and the pigment layer.⁵ The swelling and infiltration of the structure of the iris are partly due to them. On the surface of the iris we see such hemorrhages in gummatous or condylomatous iritis, in which the yellow nodules are sometimes streaked with blood.⁶

¹ Graefe-Saemisch, iv., p. 492.

² *Ophth. Hosp. Rep.*, 1874, viii., p. 3, and Nagel's *Jahresbericht*, v., p. 327.

³ *Philad. Med. and Surg. Rep.*, 1874, p. 211, and Nagel's *Jahresber.*, v., 323.

⁴ *Klin. Monatsbl. f. Augenh.*, 1892, May, p. 176.

⁵ Michel, *Lehrbuch der Augenh.*, ii. Aufl. p. 313.

⁶ Noyes, text-book on *Diseases of the Eye*, 1890, p. 408.

4. There will be severer varieties of iritis, in which the *red blood corpuscles* not only penetrate through the walls of the vessels, but even through the tissue of the iris and *form a part of the effusion into the aqueous humor*. In fibrinoplastic iritis, *e. g.* the coagulating matter of the aqueous is increased partly by the presence of lymphoid and pus cells and red blood corpuscles, causing the turbidity of the aqueous. Red blood corpuscles are also found in the fibrino-purulent forms of iritis and very often in the accompanying hypopyon, which shows sometimes streaks of blood; or its color becomes changed at the bottom from an accumulation of red blood corpuscles. This is even more marked in *spongy iritis* (Knapp), according to the examinations of Arlt, who "described the exudation as sero-fibrinous and hemorrhagic, in which the fluid and cell elements tend to separate."¹

5. The most pronounced appearance of blood, of course, occurs when the *red blood corpuscles* escape in such masses as to *fill the anterior chamber* partly or wholly and form a *regular hyphæma*. Most authors saw this in purulent iritis. Hyphæma alone (without hypopyon) as a complication of iritis is mentioned as a rare phenomenon by Klein,² Vossius,³ Keyser,⁴ and Reche.⁵ Hutchinson⁶ noticed hemorrhagic iritis, (1) after operations; (2) in sympathetic iritis, in which hyphæma is a very unfavorable symptom; (3) in chronic iritis of old people; (4) in certain arthritic individuals.

If we ask for the *causes* of the *spontaneous hemorrhages of the iris* in general (not considering the traumatic), we may look for them under two different headings:

1. *Hemorrhages*, dependent upon *diseases of the blood-vessels*, as atheroma or fatty degeneration. The latter condition very likely prevails, when violent efforts in spells of vomiting, coughing, sneezing, or during labor, in pulmonary emphysema, or heart diseases lead to hemorrhages into the anterior chamber (the increased pressure of expiration augmenting the tension in the veins and capillaries and

¹ Noyes, *l. c.*

² Klein, *Eulenburg's Real-Encycl.*, Aufl. ii., vol. viii., p. 624.

³ Vossius, *Grundriss der Augenh.*, 1888, p. 200.

⁴ Keyser, *l. c.*

⁵ Reche, *l. c.*

⁶ Hutchinson, *l. c.*

causing ruptures of their walls). The hemorrhages observed in vascular or teleangiectatic¹ growths,² *e.g.* in granulomata, in gummata, or condylomata, are a consequence of the degeneration of the wall of the vessels enclosed in the neoplasma. Some general affections leading to hemorrhages anywhere in the body may cause hyphæma, *e.g.* scurvy,³ pernicious anæmia, anæmia from great losses of blood.

2. *Hemorrhages from sudden changes of the intraocular pressure.*⁴ In plastic irido-choroiditis with complete occlusion of the pupil, the increased tension may suddenly fall to a minus condition and give rise to an extravasation of blood into the anterior chamber. The same is known of eyes which have become phthisical in consequence of cyclitis. Wecker (*l. c.*) saw hyphæma in cases of absolute glaucoma or in earlier stages of glaucoma, if its hemorrhagic character was indicated by multiple retinal hemorrhages, or in the glaucomatous period of intraocular tumors. The sudden decrease of intraocular pressure during the performance of iridectomy in glaucoma produces sometimes copious hemorrhages from the iris.

In our case I noticed the hyphæma at 8 A.M., at the first visit after the leeches were applied (at 6 P.M. on the previous day), *i. e.*, after about fourteen hours, no observation being made in the meantime, so that it may have occurred sooner. In that event we might assume that the intraocular pressure, which is often augmented in iritis,⁵ suffered an instantaneous diminution by the depletory effect of the leeches and gave rise to the bleeding.

According to Arlt,⁶ "a collection of blood in the anterior chamber may in many cases be referred to *inflammatory changes in the ciliary body* and thereby impeded reflux of blood to the *venæ vorticosæ*." This however was not here the case, as the chief diagnostic symptoms of cyclitis were wanting. There were no pathological changes of the deeper

¹ Schelske, *Lehrb. d. Aug.*, 1870, pp. 72-97, and *Nagel's Jahresber.*, i., p. 298.

² Knapp, intraocular tumors.

³ Michel, *l. c.*, p. 319.

⁴ Wecker, *l. c.*, p. 573.

⁵ Schweigger, these ARCHIVES, xx., p. 477.

⁶ Arlt, *Clinical Studies on Diseases of the Eye*, translated by L. Ware, 1885, p. 279.

uveal structures, no manifest deviation from normal tension, and especially no pain or even tenderness on gentle pressure on the upper portion of the ciliary region.

In the three cases of Reche (*l. c.*) a *rheumatic disposition* existed, which he considered as the *etiological element* of the *hemorrhagic iritis*, but in what manner he does not say. On the other hand Noyes¹ asserts that "rheumatic and gouty iritis are more *serous*." But as it is claimed that the gouty or rheumatic, or syphilitic dyscrasia are frequent factors in retinal hemorrhages from a weakened condition of the vessels,² they might also lead to hemorrhages of the iris, in spite of the thicker walls of its vessels in comparison to those of the retina. And indeed Hutchinson (*l. c.*) saw in certain arthritic individuals each attack of iritis commence with a hemorrhage into the anterior chamber.

This, however, does not apply to our patient, who, being otherwise perfectly healthy cannot be said to have suffered from any dyscrasia, even if he had some rheumatic pain in his arm.

The iritis itself being very violent, since it attained such a high degree in a very short time, it seems to me that its *hemorrhagic character* was not dependent upon any special etiological type, but that it was simply a *sign of its intensity* from the following reason: The red blood corpuscles permeate the walls of the capillary vessels by diapedesis, and will be the more numerous the more the capillary network of an organ is developed. *An effusion becomes chiefly hemorrhagic if the walls of the capillary vessels are very much changed by the inflammation; and consequently their circulation is considerably impeded, as it happens in VERY SEVERE INFLAMMATIONS.*³

This general law gives the most satisfactory explanation of our case, which shows, that *iritis of very intense character may now and then be complicated by hemorrhages.*

¹ *L. c.*, p. 410.

² *Ibid.*, p. 553.

³ Cohnheim, *Vorlesungen über allgemeine Pathologie*, I., p. 217.

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